

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Previously Presented) Method of structuring surfaces of micro-mechanical and/or micro-optical components and/or functional elements of glass-type materials, comprising:

structuring at least one surface of a first substrate in order to obtain recesses on the at least one surface;

joining said first substrate to a second substrate of glass, with the structured surface of said first substrate being joined to a surface of said second substrate of glass in an at least partly overlapping relationship;

annealing the joined first and second substrates in such a way that said glass flows into the recesses of said structured surface of said first substrate, structuring a side of said second substrate which faces said first substrate; and

separating said second substrate from said first substrate.

2. (Withdrawn) Method of structuring surfaces of micro-mechanical and/or micro-optical components and/or functional elements of glass-type materials, with application of the following steps of operation comprising:

structuring at least one surface of a first substrate in order to obtain recesses on the at least one surface;

joining said first substrate to a second substrate of glass-type material, with the structured surface of said first substrate being joined to a surface of said glass-type second substrate in an at least partly overlapping relationship; and

annealing the joined first and second substrates in such a way that said glass-type material will flow into the recesses of said structured surface of said first substrate, structuring a side of said second substrate which is turned away from said first substrate.

3. (Withdrawn) Method of structuring surfaces of micro-mechanical and/or micro-optical components and/or functional elements consisting of glass-type materials, comprising:

structuring at least one surface of said first substrate in order to obtain recesses on the at least one surface;

joining said first substrate to a second substrate of glass-type material, with the structured surface of said first substrate being joined to a surface of said glass-type second substrate in an at least partly overlapping relationship and with a gaseous medium being introduced into said recesses, which expands when heated;

annealing the joined first and second substrates in such a way that due to the expansion of said gaseous medium within said recesses in said first substrate a local displacement of said glass-type material takes place, so that a side of said second substrate which faces said first substrate is structured; and

separating said second substrate from said first substrate.

4. (Withdrawn) Method according to Claim 2, wherein said second substrate is separated from said first substrate.

5. (Previously Presented) Method according to Claim 1, wherein said second substrate is separated from said first substrate by removal of said first substrate by etching.

6. (Previously Presented) Method according to Claim 1, wherein the separation of said second substrate from said first substrate is produced by providing a parting layer between said first and second substrates that is applied on said structured surface while maintaining the structure prior to joining both substrates and that is configured as sacrificial layer that will be destroyed by thermal and/or chemical action and permits a separation of both substrates from each other.

7. (Previously Presented) Method according to Claim 6, wherein a metal layer is employed as the parting layer, the metal layer having a melting point below the melting points of said first and second substrates.

8. (Previously Presented) Method according to Claim 6, wherein an oxidizable layer is used as the parting layer, the oxidizable layer undergoing a chemical reaction when oxygen and/or thermal energy is supplied.

9. (Previously Presented) Method according to Claim 6, wherein a carbon layer, a diamond layer or a diamond-like layer is used as the parting layer.

10. (Previously Presented) Method according to Claim 1, wherein the structured surface of said first substrate presents the recesses having structure widths B while said second substrate presents a thickness D, and that the following approximate relationship applies:

$$B \geq 0.1 \cdot D.$$

11. (Previously Presented) Method according to Claim 1, wherein said first substrate is a semiconductor substrate and/or said glass is a borosilicate glass.

12. (Previously Presented) Method according to Claim 11, wherein said semiconductor substrate is a silicon substrate and/or that said borosilicate glass comprises by weight about 81% SiO₂, about 13% B₂O₃, about 4% Na₂O and about 2% Al₂O₃.

13. (Previously Presented) Method according to Claim 1, wherein the joining of said first substrate to said second substrate of glass is carried out by anodic bonding.

14. (Previously Presented) Method according to Claim 1, wherein a negative pressure prevailing throughout the joining process is preserved, after joining, in the recesses of the surface of said first substrate, between said first substrate and said second substrate of glass.

15. (Previously Presented) Method according to Claim 1, wherein an overpressure acts upon the surface of said second substrate of glass which is turned away from said first substrate throughout the annealing.

16. (Previously Presented) Method according to Claim 1, wherein the annealing process is carried out by controlling temperature and period in such a way that the inflow of said glass into the recesses of said first substrate is stopped at a desired depth of inflow, without the glass contacting a bottom of said recesses.

17. (Previously Presented) Method according to Claim 16, wherein at least one of pressure during the annealing, the temperature of the annealing and the period of the annealing are selected that a relief moulding of the structured surface of said first substrate will be produced on the surface of said second substrate of glass.

18. (Previously Presented) Method according to Claim 1, wherein one surface of said glass substrate is planished by grinding and/or polishing after annealing or after removal of said first substrate by etching.

19. (Previously Presented) Method according to Claim 1, wherein a third substrate is evenly applied on a side of said second substrate which is turned away from said first substrate prior to the annealing.

20. (Previously Presented) Method according to Claim 19, wherein said third substrate is a semiconductor substrate.

21. (Previously Presented) Method according to Claim 19, wherein said third substrate is removed by an etching operation after the annealing process and that a planar surface is created on a side of said second substrate which is turned away from said first substrate.

22. (Withdrawn) Micro-mechanical component adapted to be manufacture in accordance with Claim 2, wherein electrodes are arranged in the recesses formed in the course of the annealing in said second substrate of glass-type material on a side of the second substrate which is turned away from said first substrate, and that said recesses are spanned by an electrically conductive resilient membrane.

23. (Withdrawn) Application of said micro-mechanical component according to Claim 22 as a micro-mechanical valve or relay.

24. (Withdrawn) Method according to Claim 4, wherein the separation of said second substrate from said first substrate is produced by providing a parting layer between said first and second substrates that is applied on said structured surface while maintaining the structure prior to joining both substrates and that is configured as sacrificial layer that will be destroyed by thermal and/or chemical action and permits a separation of both substrates from each other.

25. (Withdrawn) Method according to Claim 2, wherein the structured surface of said first substrate presents the recesses having structure widths B while said second substrate presents a thickness D, and that the following approximate relationship applies:

$$B \geq 0.1 \cdot D.$$

26. (Withdrawn) Method according to Claim 3, wherein the structured surface of said first substrate presents the recesses having structure widths B while said second substrate presents a thickness D, and that the following approximate relationship applies:

$$B \geq 0.1 \cdot D.$$

27. (Withdrawn) Method according to Claim 2, wherein said first substrate is a semiconductor substrate and/or said glass-type material is a borosilicate glass.

28. (Withdrawn) Method according to Claim 3, wherein said first substrate is a semiconductor substrate and/or said glass-type material is a borosilicate glass.

29. (Withdrawn) Method according to Claim 2, wherein the joining of said first substrate to said second substrate of glass-type material is carried out by anodic bonding.

30. (Withdrawn) Method according to Claim 3, wherein the joining of said first substrate to said second substrate of glass-type material is carried out by anodic bonding.

31. (Withdrawn) Method according to Claim 2, wherein a negative pressure prevailing throughout the joining process is preserved, after joining, in the recesses of the surface of said first substrate, between said first substrate and said second substrate of glass-type material.

32. (Withdrawn) Method according to Claim 4, wherein a negative pressure prevailing throughout the joining process is preserved, after joining, in the recesses of the surface of said first substrate, between said first substrate and said second substrate of glass-type material.

33. (Withdrawn) Method according to Claim 2, wherein an overpressure acts upon the surface of said second substrate of glass-type material which is turned away from said first substrate throughout the annealing.

34. (Withdrawn) Method according to Claim 3, wherein an overpressure acts upon the surface of said second substrate of glass-type material which is turned away from said first substrate throughout the annealing.

35. (Withdrawn) Method according to Claim 2, wherein the annealing is carried out by controlling temperature and period in such a way that the inflow of said

glass-type material into the recesses of said first substrate is stopped at a desired depth of inflow, without the glass-type material contacting a bottom of said recesses.

36. (Withdrawn) Method according to Claim 2, wherein one surface of said glass substrate is planished by grinding and/or polishing after annealing or after removal of said first substrate from the second substrate by etching.

37. (Withdrawn) Method according to Claim 3, wherein one surface of said glass substrate is planished by grinding and/or polishing after annealing or after removal of said first substrate from the second substrate by etching.

38. (Withdrawn) Method according to Claim 3, wherein a third substrate is evenly applied on a side of said second substrate which is turned away from said first substrate prior to the annealing.

39. (Previously Presented) Method according to Claim 1, wherein the joined second substrate includes a free upper side which is turned away from said first substrate during the flow of the glass into the recesses of said structured surface of said first substrate.

40. (New) Method according to Claim 1, wherein the surface of said second substrate is flat.

41. (New) Method according to Claim 1, wherein a process chamber pressure acts upon the surface of said second substrate which is turned away from said first substrate throughout the annealing and the flow of the glass into the recesses of said structured surface of said first substrate.